SECTION C. SURVEY DOCUMENTS

Section	Page
National Science Foundation Cover Letter	117
BUREAU OF THE CENSUS COVER LETTER	118
Survey Questionnaire, Form RD-IS	119
FORM RD-IS INSTRUCTIONS	121
Survey Questionnaire, Form RD-1A	125
FORM RD-1A INSTRUCTIONS	129



NATIONAL SCIENCE FOUNDATION 4201 WILSON BOULEVARD ARLINGTON, VIRGINIA 22230

FROM THE DIRECTOR
NATIONAL SCIENCE FOUNDATION

The National Science Foundation requests your company's participation in its 1994 Survey of Industrial Research and Development. This annual survey is the only source of detailed information on U.S. industry's research and development (R&D) performance.

Your company's participation is vital to the accuracy of the resulting information. Because R&D expenditures are concentrated in relatively few companies, a completed response is needed from each surveyed firm – there is no good substitute for the information that you can provide. Your company can be assured of complete confidentiality. Survey data will be released only in aggregate form so that responses of individual companies cannot be identified.

Survey results will be made available to government and industry officials, researchers, and other interested individuals. If you have questions concerning the operation of this survey, please direct them to the Census Bureau's Environment, Technology, and Innovation Branch on (301) 457–1339. If you would like to receive a copy of the final publication or if you need to speak with someone at NSF, please call Jennifer Gray in the Division of Science Resources Studies on (703) 306–1772.

Sincerely,

Meal fance

Neal Lane Director

Enclosures



UNITED STATES DEPARTMENT OF COMMERCE Bureau of the Census Washington, DC 20233-0001

OFFICE OF THE DIRECTOR

FROM THE DIRECTOR BUREAU OF THE CENSUS

We have enclosed your company's report form and instructions for the 1994 "Survey of Industrial Research and Development." Please review the instructions, complete the form, and return it within 60 days. Federal law requires your responses to four items identified on the form. Your voluntary responses to all other items are needed to assure useful results. This survey can help your business and trade association plan new products and markets, and assist public officials in research funding and tax decisions that affect your industry.

We also ask that you keep track of the total time it takes to complete the survey form and the percent used for: (1) reading the instruction manual, (2) collecting the necessary information, and (3) completing the survey form. Please enter this information in the remarks section on the back of the report form.

Information you report should cover all your company's domestic operations for calendar year 1994. We recognize that providing this information is a burden and we have worked hard to minimize it. For example, if you do not have book records for any item, you may provide carefully prepared estimates. The law that authorizes this survey (Title 13, United States Code) requires that we keep your report in full confidence. Only sworn Census Bureau employees will see your information and they will use it only for statistical purposes.

We conduct this survey with National Science Foundation (NSF) support. We have enclosed a letter from the Director of the NSF emphasizing the importance and usefulness of the survey. If you have any questions, please contact my staff on (301) 457–1339. Thank you in advance for your cooperation.

Martha Farnsworth Riche

Formwath Rich

Sincerely,

Enclosures

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incurred for the purpose of designing poll abatement products or product characteris or of designing pollution abatement featur	ution stics		,,,			+				+		13	90	
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tem 7 - COVERAGE AND OPERATION						301 🗆 Ye								
 A. Are research and development expenditu including subsidiaries, reported on this for 	res fo	r entire d	iomestic comp	any,			o – Please explain	in the "Rema	irks" se	ction on	the back o	f the pa	age.	
Was this company owned or controlled b December 31, 1994?	y anot	her com	pany on			103 🗌 Ye	es – Complete 13.	601 C. Date acq	uired: !	Wonth _	Yea	r	_	
C. New owner information					13	IO4 LI NO)	·					_	
602 Name														
603 Address (Number and street)														
604 City			-							305 State		606 71	P Code	
Item 8 - CERTIFICATION - This report is subst	tantially	v accurate	and has been or	enared i	n accordance y	with instr	uctions							
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Signature of authorized official					Title				L		1		701 Date	
801 REMARKS												1		
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FORM RD-1(S) (8-18-94)					Page									

Page 2 -

INSTRUCTIONS FOR SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT DURING 1994

FORM RD-1(S)

OUTLINE OF INSTRUCTIONS Section Page 1 Definition of Research and Development 2 2 2 2 Item 2 - Number of Research and Development Scientists and Engineers 3 Section II - Research and Development Performed Within the Domestic Company...... Item 6 - Pollution Abatement Research and Development Performed Within the Company

GENERAL INSTRUCTIONS

INTRODUCTION – Comprehensive and timely information about the nature and support of corporate research and development (R&D) activities is an important component in the overall assessment of our nation's scientific and technological resources. The information you provide is used to prepare national measures of industrial research and development (R&D) not available from any other source. By carefully completing this report, the accuracy of this information is ensured.

SURVEY SCOPE – This report covers both public and privately-owned nonfarm business firms in all sectors of the United States Economy. It does not include operations owned by Federal, State or local governments, or nonprofit organizations.

If your company is a nonprofit organization, please indicate so in the remarks section, page 2, and return the form.

If this form has been directed to a trust or pension plan which performs no activity other than investments, do not report. Please note in remarks section, page 2, and return the form.

REPORTING ENTITY – Report R&D for all domestic operations of your company, including subsidiaries and divisions. Report for all parts of the company that are located in the 50 states and the District of Columbia. Report sales and employment figures for all parts of the company, even those that do not perform R&D, as long as they are located in the 50 states or the District of Columbia.

If this form has been directed to a holding company, report for all subsidiaries and operations under the ownership and control of the holding company.

Companies Reporting in Survey for the First Time – Companies which did not report in the 1993 survey are asked to provide figures for both 1993 and 1994. If the company had no R&D expenditures, complete only Item 1. Enter "No R&D" in the "Remarks" section, sign, and return the form.

Figures for Earlier Years Are Preposted on the Form – If your company reported for 1993, entries from that form have been copied on the present form. Please describe in the "Remarks" section (page 2 of the form) the reasons for any substantial increase or decrease in the 1994 figures entered on this form when compared to corresponding 1993 figures. Examples of such reasons are new government contracts, acquisitions and divestitures, revised accounting method, etc.

If you acquired or disposed of a unit performing an important amount of R&D during the 2-year period, please identify the unit in "Remarks," and give the total amount of R&D accounted for by such unit.

Revision of Earlier Year Figures – If your company reported for 1993, entries from that form are pre-printed on the current form. Please revise the 1993 figures to be comparable with 1994 data and explain in the "Remarks" section any significant revisions made.

ESTIMATES ARE ACCEPTABLE – If you cannot answer a question from your company records, please estimate the answer carefully.

HOW TO REPORT - Report all value figures in thousands of dollars.

Example: 1,123,678,599 dollars.

	Bil.	Mil.	Thou.	Dol.
Report	\$1	123	679	000

If you estimate your answers in millions of dollars, please fill the thousands box with zeros.

Example: 1,124 million dollars.

Re

	Bil.	Mil.	Thou.	Dol.
port	\$1	124	000	000

PERIOD COVERED BY THE REPORT – Figures should be reported on a calendar year basis. Fiscal year data are acceptable for all items except for employment, provided your fiscal year ends between September and March. Please report employment figures (Items 1B and 2) for the specific time indicated for both of these items. Enter "0" where appropriate rather than leaving a blank space.

ADDITIONAL FORMS – Photocopies of this form are acceptable. If you require additional forms, write to the Bureau of the Census, 1201 East 10th Street, Jeffersonville, IN 47132-0001 or call (812) 288–3331.

FILING EXTENSIONS – If you cannot complete the survey in 60 days, request an extension of time by writing to the address below (please include your Census File Number):

Bureau of the Census 1201 East 10th Street Jeffersonville, IN 47132-0001

or call: (812) 288-3331.

ALTERNATIVE REPORTING FORMATS – For information concerning use of reporting formats other than the form provided, such as computer tape, diskette, or printouts, contact Ronanne M. Capps or Nancy Higgins on (301) 457–1339.

BURDEN HOUR ESTIMATE – Public reporting burden for this collection of information is estimated to average 20 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimates or any other aspects of this collection of information including suggestions for reducing this burden to Herman G. Fleming, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230; and to the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB No. 3145-0027), Washington, DC 20503.

DIRECT QUESTIONS regarding this form to the Bureau of the Census, ATTN: Manufacturing and Construction Division, Washington, DC 20233-0001 or call (301) 457–1339.

DEFINITION OF RESEARCH AND DEVELOPMENT – R&D includes basic research and applied research in the sciences and in engineering, and design and development of prototype products and processes.

For the purposes of this study, R&D includes activities carried on by persons trained, either formally or by experience, in the physical sciences including related engineering, and the biological sciences including medicine but excluding psychology, if the purpose of such activity is to do one or more of the following things:

- 1. Pursue a planned search for new knowledge, whether or not the search has reference to a specific application.
- Apply existing knowledge to problems involved in the creation of a new product or process, including work required to evaluate possible uses.
- Apply existing knowledge to problems involved in the improvement of a present product or process.

Research and development includes the activities described above whether assigned to separate R&D organizational units of the company or carried out by company laboratories and technical groups not part of an R&D organization. Reporting the R&D activities of such latter groups may require the use of estimates for some of the guestions.

Activities to be excluded from R&D:

- Routine product testing
- · Research in social sciences or psychology
- Geological and geophysical exploration activities

- Technical services such as:
 - · Quality and quantity control
 - Technical plant sanitation control
- Trouble-shooting in connection with breakdowns in full-scale production
- Advertising programs to promote or demonstrate new products or processes
- Assistance in preparation of speeches and publications for persons not engaged in R&D
- Social Science R&D Social Science R&D is defined to encompass those activities devoted to further understanding the behavior of groups of human beings or of individuals as members of groups. Some of the topics include the following:
 - Personnel R&D
 - Economic R&D
 - · Artificial intelligence and expert systems R&D
 - · Consumer, market, and opinion R&D
 - Engineering psychology R&D
 - . Management and organization R&D
 - Actuarial and demographic R&D
 - Educational processes and applications R&D
 - · R&D in law

SPECIFIC INSTRUCTIONS

▶ Section 1 - GENERAL COMPANY DATA

Item 1 - SALES AND EMPLOYMENT FOR THE COMPANY

Item 1A - Domestic Net Sales and Receipts

Sales and receipts are defined as the revenue for goods produced, distributed, or services provided. Include revenue from investments, rents, and royalties only if it is the principal business of the company. The reported figures should represent net value f.o.b. plant after discount and allowances and should exclude freight charges and excise taxes.

include:

- All operating receipts from taxable operations, as well as total revenue from tax-exempt activities
- Sales of products and services to other companies, individuals, U.S. Government agencies, and foreign countries
- Transfers to foreign subsidiaries

Exclude:

- Domestic intra-company transfers
- Sales by foreign subsidiaries

Item 1B - Domestic Employment

Report the number of employees of the company in all activities in the 50 states and the District of Columbia during the pay period which includes March 12, 1994. This figure would be the same as Item 1 of Treasury Form 941, if one Form 941 was filed for the entire company. Report number of employees, not payroll.

Item 2 - NUMBER OF RESEARCH AND DEVELOPMENT SCIENTISTS AND ENGINEERS

Scientists and engineers are defined for this survey as all persons engaged in scientific or engineering work at a level which requires a knowledge of physical or life sciences or engineering or mathematics equivalent to completion of a 4-year college course with a major in these fields, regardless of whether or not they actually hold a degree in this field.

The figure on R&D scientists and engineers will be obtained primarily from two sources:

- For company laboratories performing only R&D, report the number of scientists and engineers on the rolls in January.
- 2. For employees whose activities are not solely devoted to R&D, report the proportion of their time that is devoted to R&D. For example, if a company had the full-time equivalent of 60 scientists and engineers in January 1995 and one-fourth of their time was charged to R&D projects, the figure for the number of R&D scientists and engineers for this company would be 15.

Item 3 - REPORT COSTS INCURRED FOR RESEARCH AND DEVELOPMENT

include as costs:

- · Wages, salaries, and related costs
- · Materials and supplies consumed
- R&D depreciation
- Cost of computer software used in R&D activities
- · Utilities, such as telephone, telex, electricity, water, and gas
- Travel costs and professional dues
- Property taxes and other taxes (except income taxes) incurred on account of the R&D organization or the facilities they use
- Insurance expenses
- . Maintenance and repair, including maintenance of buildings and grounds
- Company overhead including: personnel, accounting, procurement and inventory, and salaries of research executives not on the payroll of the R&D organization

Exclude as costs:

- R&D performed abroad (outside the Continental U.S.), such as in Canada and Puerto Rico (Except in Item 3.C.)
- R&D performed by non-company R&D organizations of any kind (Except in Item 3.B.)
- Capital expenditures
- Patent expense
- Income taxes and interest
- The portion of company-held R&D contracts that were subcontracted outside the reporting company
- Fellowships, grants, and gifts to promote R&D or the study of science and engineering

 Social Science R&D

item 3.A - Report Costs Incurred for Research and **Development Performed Within the Company**

Federally sponsored R&D performed within the company should reported in column 4.

Costs of company sponsored R&D performed within the company, or R&D performed within the company under contract from nonfederal sources should be reported in column 5.

Costs of INDEPENDENT R&D should also be reported in column 5. For the purpose of this survey, INDEPENDENT R&D is defined as R&D performed by the company for which you anticipate reimbursement by the government through indirect charges for the purchase of products or services.

Types of Research

3.A.1 - Basic Research

Include the cost of research projects which represent original investigation for the advancement of scientific knowledge and which do not have specific immediate commercial objectives, (although they may be in the fields of present or potential interest to the reporting company).

Item 3.A.2.a - Applied Research

Include the cost of research projects which represent investigation in discovery of new scientific knowledge and which have specific commercial objectives with respect to either products or processes.

Item 3.A.2.b - Development

Include the cost of projects which represent technical activity concerned with non-routine problems encountered in translating research. Include the findings or other general scientific knowledge into products or process.

include as development:

- The design and operation of pilot plants and semiwork plants
- Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements
- · Design, construction, and testing of prototypes and models
- · Designs for special manufacturing equipment and tools
- · Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals
- Software development

Exclude as development:

- · Routine technical services to customers
- Toolmaking and tool tryout
- Production of detailed construction drawings and manufacturing blueprints
- Pre-production planning

ESTIMATING BASIC, APPLIED, AND DEVELOPMENT EXPENDITURES

If your company does not keep records that meet or can be allocated to these specific categories, estimate by:

- · Isolating the projects that clearly fall in the development category. If your company fabricates products, such development activity will include the design, construction, and testing of prototypes and models. Some defense contracts typically call for several test models. If your company's R&D frequently involves the development of a "process" as in chemicals and petroleum, such development activity would include operations beyond the bench scale, primarily the design and operations of pilot plants or semiworks.
- Isolating the organizational units which have R&D activities that can be readily classified based on the function assigned to the unit. If R&D work is done in production units as well as in various laboratories, it is generally development type.
- Distributing the balance on the basis of individual projects or on the basis of other summaries of the work. Please use the definitions for basic, applied, and development given above.

item 3.A.2.c - Total Costs for Applied Research and Development

Add line 3.A.2.a and line 3.A.2.b.

Item 3.A.3 - Total Costs for Basic and Applied Research and Development Performed Within the Company

Add line 3.A.1 and line 3.A.2.c.

item 3.B - Total Costs Incurred for Research and **Development Performed Outside the Company Within the** United States and Financed by the Company

Report payments for R&D activities performed for the company in the form of contracts, grants, and fellowships made to other industrial firms, commercial laboratories, consultants, educational institutions, hospitals, and research institutions or other organizations.

Do not include subcontracting of R&D contracts received from the Federal Government or other companies.

Item 3.C - Total Costs Incurred for Research and Development Performed by Foreign Subsidiaries or by Other Organizations Outside of the United States and Financed by the Company

FOREIGN SUBSIDIARIES are those outside of the 50 States and the District of Columbia.

Report the amount of R&D financed by the U.S. parent or its foreign subsidiaries, including Canada and Puerto Rico, and performed by company R&D laboratories, branch plants, or other organizations, located outside the United States.

Exclude R&D activities performed by foreign subsidiaries which were financed by foreign governments or other organizations.

Item 3.D - Total-Company and Other Funds, Except Federal

With the exception of "Other funds," this number represents company sponsored R&D performed within the company. It is comparable to information reported on Form 10K if you report to the Securities and Exchange Commission.

To complete this item, add line 3.A.3, line 3.B, and line 3.C.

SOURCE OF FUNDS

Item 3 - FEDERAL FUNDS - (Columns 1+4)

Include:

- Amount of work done on Federal R&D contracts or subcontracts in the current year
- R&D portions of procurement contracts or subcontracts

Exclude:

- Federal R&D contracts and R&D portions of procurement contracts that you subcontracted to other R&D organizations (including these would cause duplication in the statistical totals, which include data on work actually performed by each company).
- If your company performs independent research and development (IR&D), please read the following carefully:
- Definition of IR&D We define IR&D funds as expenditures that
 are reimbursable by the government for qualified projects that
 usually have potential interest to the Department of Defense or
 other agencies of the Federal government. These IR&D funds are
 not included in work done under a research contract with the
 government. They are reimbursed to the company through
 indirect charges to the government for the purchase of products
 or services.

HOW TO REPORT

Report expenditures for which you anticipate reimbursement as company funds in column 5. Report expenditures in the period for which they are incurred. Do not include the actual reimbursement.

Item 3 - COMPANY AND OTHER FUNDS

(Columns 2+5) Report all company-sponsored R&D performed within the company. Report R&D performed under contract from non-Federal sources.

Item 4 - COMPANY AND OTHER FUNDS, EXCEPT FEDERAL, FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE COMPANY BUDGETED FOR THE YEAR 1995

Report the estimated cost of company and other non-federally sponsored R&D that will be performed within the 50 states and the District of Columbia. This item is comparable to the 1994 figure reported in Item 3.A.3, column 5.

Section II - RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE DOMESTIC COMPANY

Item 5 - ENERGY RESEARCH AND DEVELOPMENT

Include all spending for R&D to increase energy resources or capabilities, including the development of energy equipment. Energy R&D can include costs of R&D projects (both product and process) on exploration, extraction, transportation, processing, storage, generation (including conversion), distribution, conservation, etc., etc., of present, new, or improved forms of energy. Record energy R&D spending according to type of energy in Items 5A through 5E.

If R&D spending is for joint or multiple purposes, estimate and report the portion of cost incurred for the energy purpose. In the limited number of cases where the separation of joint (multiple) costs by type of energy cannot be estimate, include the total cost of the R&D project when the primary purpose of the project is energy R&D. If the project is not primarily for energy R&D then exclude all of the project cost.

Conservation and utilization includes R&D activities undertaken to reduce consumption either at the point of energy use or in the transmission, transportation, storage, and conversion of energy. Examples of such are R&D undertaken primarily to reduce fuel consumption in manufacturing, to improve the efficiency of transportation of energy products, or to produce an end product which is more efficient in energy consumption.

All Other Energy Includes areas such as wind, waste, hydroelectric, etc. Also include in this category the development of energy equipment which cannot be readily classified in Items 5A to 5C.

Item 6 - POLLUTION ABATEMENT RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE COMPANY

Includes R&D spending for the purpose of reducing or eliminating the emission of pollutants. "Pollution" refers to the emission of pollutants to the outside of a firm's property or activities; "abatement" includes prevention, treatment, or recycling.

Exclude costs:

- · to contribute to environmental aesthetics
- to increase equipment durability in corrosive environments
- to conserve energy (include as energy R&D in item 5C)
- to conserve natural resources
- to increase employee comfort, safety, and health

If the only purpose of the R&D spending is pollution abatement, include the total expenditures on the project. If pollution abatement is only one of several purposes, report only the R&D costs associated with pollution abatement. When the separation of joint costs is not feasible, include the total R&D costs for a project if the purpose is primarily (more than 50 percent) for pollution abatement.

If the project is not primarily for pollution abatement purposes, exclude all of the project costs. Also exclude project costs if expected pollution abatement benefits are obtained at no extra cost.

Item 7 - COVERAGE AND OPERATIONAL STATUS

Item 7A

Check the appropriate box if the domestic company expenditures on this form, including all subsidiaries, have R&D. If no, please explain in remarks section or in a transmittal letter.

Item 7B

Check the appropriate box if this company was owned or controlled by another company on December 31, 1994. If yes, provide date of the organizational change.

Item 7C

Provide the name and address of the new owner. In the "Remarks" section, specify change or correction, e.g., wholly-owned subsidiary of ABC Company", "merger with XYZ Company", "acquired by 123 Corporation".

Item 8 - CERTIFICATION

Report the name and telephone number of the person to contact regarding this report.

NOTICE — Your report to the Census Bureau is confidential by law (title 13. U.S. Code).

FORM **RD-1A** (10-13-94)

U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

SURVEY OF INDUSTRIAL RESEARCH AND **DEVELOPMENT DURING 1994**

In correspondence pertaining to this report refer to this CENSUS FILE NUMBER (11 digits)

The instructions and definitions on this form are not complete. Please read the enclosed instruction sheet before completing this form.

RETURN TO



BUREAU OF THE CENSUS 1201 East 10th Street Jeffersonville, IN 47132-0001

Data supplied in item 1 and in item 3A.3. columns 1 and 3 for 1994 on this form will satisfy the mandatory reporting requirements (title 13, U.S. Code).

FROM THE DIRECTOR **BUREAU OF THE CENSUS**

The Bureau of the Census conducts the "Survey of Industrial Research and Development" under the sponsorship of the National Science Foundation (NSF).

Enclosed are the 1994 survey form and instructions for completing it, and a letter from the NSF emphasizing the survey's prominence. The 1994 report covers your entire domestic company operations. We will appreciate your cooperation in reporting the requested information.

The law (title 13, United States Code) authorizes this report. Your response is mandatory for item 1 and item 3A.3, columns 1 and 3. We need your voluntary cooperation in reporting the remaining items to make the survey results comprehensive and accurate. We recognize you may not maintain book records for some items. In such cases, please provide carefully prepared estimates.

By section 9 of title 13, your report to the Bureau of the Census is confidential. Only sworn Bureau of the Census employees will see the information you reported, and they will use it only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.

Please return the completed form within 60 days. If you have questions concerning the survey, need copies of the form, or need additional time, please call the survey office on (301) 763-2962. We thank you for your cooperation in this vital survey.

formwath Rich

Sincerely.

Martha Farnsworth Riche

Enclosures

IMPORTANT

The telephone number to call for assistance has been changed from (301) 753-2962

(301) 457-1339

PLEASE OPEN AND BEGIN THE SURVEY WITH ITEM 1.

GENERAL INSTRUCTIONS

Please complete this form and return within 60 days in the envelope provided. Make a copy for your records. THIS REPORT SHOULD COVER YOUR ENTIRE COMPANY, INCLUDING ALL SUBSIDIARIES, UNLESS OTHERWISE DESIGNATED.

Enter 0 (zero) where appropriate rather than leaving a blank space

Reasonably accurate estimates are acceptable.

other than investments, do not report. Please note in remarks and If your company is a nonprofit organization, please indicate so in directed to a trust or pension plan which performs no activity remarks section and return the form. If this form has been return the form.

♦ Item 1 - SALES AND EMPLOYMENT FOR COMPANY	Domestic
	sales and receipts of
	this company
	1994
	Bil. Mil. Thou. Dol.
A. INCLUDE sales of products and services to other companies, individuals. U.S. Government agencies, and foreign	102
countries from all domestic operations of your company.	000
	Domestic
	employment
	1994
	Number
B. Total domestic company employment in all activities during the pay period which includes the 12th of March 1994.	112

8

RESEARCH AND DEVELOPMENT — R&D

Includes basic and applied research in the sciences and in engineering, and design and development of prototype products and processes

excluding psychology, if the purpose of such activity is to do one engineering, and the biological sciences including medicine but includes activities carried on by persons trained, either formally or by experience, in the physical sciences including related For the purposes of this survey, research and development or more of the following things:

 Pursue a planned search for new knowledge, whether or not the search has reference to a specific application. (Basic Research)

2. Apply existing knowledge to problems involved in the creation of a new product or process, including work required to evaluate possible uses. (Applied Research)

improvement of a present product or process. (Development) Apply existing knowledge to problems involved in the લં

Research and development includes the activities described above whether assigned to separate R&D organizational units of technical groups not part of an R&D organization. Reporting the R&D activities of such latter groups may require the use of estimates for some of the questions. the company or carried out by company laboratories and

See instructions for more detail.

Item 2 - CHECK FOR RESEARCH AND DEVELOPMENT

Mark (X) the appropriate box.

- 201 □ Company had R&D in 1994 Complete form, enter zeros where applicable, and return this form.
- 202 Company had no R&D in 1994, but has in the past and may in the future Go to item 7, sign, and return this form.
 - 203 Company does not conduct R&D Go to item 7, sign, and return this form.

		15 +1									,	
A WITHIN THE COMBANY Company to the second s		Federal funds	spun	* .	Co	npany a	Company and other	-		Total ((1) + (2))	() + (2))	
		E				(2)				(3)	(1	
from B and C)	Bil.	Mii.	Thou.	Dols.		Ξ	Thou.	Dols.	Bil.	Mil.	Thou.	Dols.
1. Basic research	304		- 1,000 Tuje		306				306			
If "None," please mark (X) →	49			000	\$			000	\$			000
2. Applied research	314		ad Grand (1878)		315				316		-	
and development a. Applied research	₩			000	49			000	\$			000
	324				326				326			
b. Development	₩		1 TO 1 1 TO 1	000	€			. 000	€9			.00
	334			8	336			111	336			
c. Total (Sum of lines a and b) →	\$		*	1000	€9			000				-00
	344				346	_			346	-		
3. TOTAL (Sum of 1 and 2c)	\$			900				000	 \$.000
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B. Outside the company – Total company funds for research and development activities financed by the company but performed by others outside the company												
within the United States (Should be excluded from A3)				7	8			000				1
C. Foreign – Total company funds for research and development activities performed by foreign subsidiaries or by other organizations outside the United States (Should be excluded from A3)				8 4	 98 49			000				
					376						E	
10. IOIAL - Company and other funds, except Federal (This line represents company sponsored research and development with the exception of "other funds")					 !	 :	<u>, mar y missionale en</u>					
(Sum of A3 (column 2), B, and C)				\$				000				
Item 4 - COMPANY AND OTHER FUNDS, EXCEPT FEDER	FEDERAL FOR RESEARCH AND COMPANY BUDGETED FOR	RESEAF IDGETE	ICH AND FOR	۵	Bil.	Mii. — —	Thou.	Dols.			176	
INE VEAK 1995				4	104	-						All Control of the Co
				\	_							

Item 5 - NUMBER OF RESEARCH AND DEVELOPMENT SCIENTISTS AND ENGINEERS	San	
Includes all persons engaged in scientific or engineering work at a level which requires a knowledge of physical or life sciences, engineering, or mathematics equivalent to completion of a 4-year college course of study with a major in these fields, regardless of whether or not they actually hold a degree in this field.	equires a knowledge of physical or college course of study with a majeld.	LO
		January 1995
Report the full-time equivalent number of R&D scientists and engineers on the rolls in January 1995.	olls in January 1995.	Number
proportion of their time that is devoted to research and development, report the proportion of their time that is devoted to research and development. (See instructions for examples)	nent, report the actions for examples)	502
Item 6A - COVERAGE AND OPERATIONAL STATUS	- NEW OWNER OR OPERATOR	
Are research and development expenditures for entire domestic company, including subsidiaries reported on this form?		
☐ No – Please explain in remarks or on transmittal letter.		
☐ Yes - Complete 6B. Date acquired	eos State	808 ZIP Code
Please complete the checks listed below BEFORE returning this questionnaire. By checking these items you will reduce the likelihood of our calling you to resolve an error or inconsistency.	Item 7 - CERTIFICATION - This report is substantially accurate and has been prepared in accordance with instructions.	his report is substantially d in accordance with
In item 1A: Yes No	Name of person to contact regarding this report	ding this report
1. Sales is reported in thousands of dollars, NOT in millions or dollars		
In item 1B:	Area code	Number Extension
2. Your answer describes the number of employees, NOT company payroll	Telephone ——▶	
In item 3:	Signature of authorized official	
 verify that rederal runds (column 1) plus Company funds (column 2) equals Total funds (column 3) for: 		
a. Basic research (3A.1)	Title	701 Date
b. Applied research (3A.2a)	801 REMARKS	
d. Total applied research and development (3A.2c)		
4. Verify that basic research (3A.1) plus applied research and development (3A.2c) equals total funds spent within the company (3A.3)		
5. Verify in column 2 (Company and other), that total funds within the company (3A.3), plus funds spent outside the company (3B) and by foreign subsidiaries (3C), equals total funds spent (3D)		
IF THE ANSWER TO ANY OF THE ABOVE CHECKS IS "NO", PLEASE MAKE THE NECESSARY CORRECTIONS IN THE APPROPRIATE ITEM(S) OR PROVIDE AN EXPLANATION IN THE REMARKS SECTION.		

INSTRUCTIONS AND DEFINITIONS FOR SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT DURING 1994 FORM RD-1A

GENERAL INSTRUCTIONS

Please complete and return this form in the envelope provided within 60 days. Make a copy for your records.

INTRODUCTION – Comprehensive and timely information about the nature and support of corporate research and development (R&D) activities is an important component in the overall assessment of our nation's scientific and technological resources. The information you provide is used to prepare national measures of industrial R&D not available from any other source. By carefully completing this report, the accuracy of this information is ensured.

SURVEY SCOPE – This report covers both public and privately-owned nonfarm business firms in all sectors of the United States economy. It does not include operations owned by Federal, State or local governments, or nonprofit organizations.

If your company is a nonprofit organization, please indicate so in the remarks section, page 4, and return the form.

If this form has been directed to a trust or pension plan which performs no activity other than investments, do not report. Please note in remarks section, page 4, and return the form.

REPORTING ENTITY – Report R&D for all domestic operations of your company, including subsidiaries and divisions. Report for all parts of the company that are located in the 50 States and the District of Columbia. Report sales and employment figures for all parts of the company, even those that do not perform R&D, as long as they are located in the 50 States or the District of Columbia.

If this form has been directed to a holding company, report for all subsidiaries and operations under the ownership and control of the holding company.

ESTIMATES ARE ACCEPTABLE – If you cannot answer a question from your company records, please estimate the answer carefully.

HOW TO REPORT – Report all value figures in thousands of dollars.

Example: 1,123,678,599 dollars.

	Bil.	Mil.	Thou.	Dol.
Report	\$1	1 1 123	679	000

If you estimate your answers in millions of dollars, please fill the thousands box with zeros.

Example: 1,124 million dollars.

	Bil.	Mil.	Thou.	Dol.
Report	\$1	124	000	000

Enter "0" where appropriate rather than leaving a blank space.

PERIOD COVERED BY THE REPORT – Figures should be reported on a calendar year basis. Fiscal year data are acceptable for all items except for employment, provided your fiscal year ends between September and March. Please report employment figures (Items 1B and 5) for the specific time indicated for both of these items.

ADDITIONAL FORMS – Photocopies of this form are acceptable. If you require additional forms, write to the Bureau of the Census, 1201 East 10th Street, Jeffersonville, IN 47132-0001 or call (812) 288-3331.

FILING EXTENSIONS – If you cannot complete the survey in 60 days, request an extension of time by writing to the address below (please include your Census File Number):

Bureau of the Census 1201 East 10th Street Jeffersonville, IN 47132-0001

or call: (812) 288-3331.

BURDEN HOUR ESTIMATE – Public reporting burden for this collection of information is estimated to average 1 hour per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimates or any other aspects of this collection of information including suggestions for reducing this burden to Herman G. Fleming, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230; and to the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB No. 3145-0027), Washington, DC 20503.

Direct any **QUESTIONS** regarding this form to the Bureau of the Census, ATTN: Manufacturing and Construction Division, Washington, DC 20233-0001, or call (301) 457–1339.

DEFINITION OF RESEARCH AND DEVELOPMENT – R&D includes basic

DEVELOPMENT – R&D includes basic research and applied research in the sciences and in engineering, and design and development of prototype products and processes.

For the purposes of this study, R&D includes activities carried on by persons trained, either formally or by experience, in the physical sciences including related engineering, and the biological sciences including medicine but excluding psychology, if the purpose of such activity is to do one or more of the following things:

 Pursue a planned search for new knowledge, whether or not the search has reference to a specific application.

- Apply existing knowledge to problems involved in the creation of a new product or process, including work required to evaluate possible uses.
- Apply existing knowledge to problems involved in the improvement of a present product or process.

Research and development includes the activities described above whether assigned to separate R&D organizational units of the company or carried out by company laboratories and technical groups not part of an R&D organization. Reporting the R&D activities of such latter groups may require the use of estimates for some of the questions.

Activities to be excluded from R&D:

- Research in social sciences or psychology
- Routine product testing
- · Geological and geophysical exploration activities
- · Technical services such as:
 - Quality and quantity control
 - · Technical plant sanitation control
 - Trouble-shooting in connection with breakdowns in full-scale production
 - Advertising programs to promote or demonstrate new products or processes
 - Assistance in preparation of speeches and publications for persons not engaged in research and development.
- Social Science R&D Social Science R&D is defined to encompass those activities devoted to further understanding the behavior of groups of human beings or of individuals as members of groups. Some of the topics include the following:
 - Personnel R&D
 - Economic R&D
 - Artificial intelligence and expert systems R&D
 - · Consumer, market, and opinion R&D
 - Engineering psychology R&D
 - Management and organization R&D
 - · Actuarial and demographic R&D
 - · Educational processes and applications R&D
 - · R&D in law

SPECIFIC INSTRUCTIONS

Item 1 – SALES AND EMPLOYMENT FOR THE COMPANY

Item 1A - Domestic Sales and Receipts

Sales and receipts are defined as the revenue for goods produced, distributed, or services provided. Include revenue from investments, rents, and royalties only if it is the principal business of the company. The reported figures should represent net value f.o.b. plant after discount and allowances and should exclude freight charges and excise taxes.

Include:

- All operating receipts from taxable operations, as well as total revenue from tax-exempt activities
- Sales of products and services to other companies, individuals, U.S. Government agencies, and foreign countries
- · Transfers to foreign subsidiaries

Exclude:

- · Domestic intra-company transfers
- · Sales by foreign subsidiaries

Item 1B - Domestic Employment

Report the number of employees of the company in all activities in the 50 States and the District of Columbia during the pay period which includes March 12, 1993. This figure would be the same as Item 1 of Treasury Form 941, if one Form 941 was filed for the entire company. Report number of employees, not payroll.

Item 2 - CHECK FOR RESEARCH AND DEVELOPMENT

Check the box that best describes the R&D activities of your company.

Item 3 – REPORT COSTS INCURRED FOR RESEARCH AND DEVELOPMENT

Include as costs:

- · Wages, salaries, and related costs
- Materials and supplies consumed
- R&D depreciation
- Cost of computer software used in R&D activities
- Total charges for work done on contract, including profit
- Utilities, such as telephone, telex, electricity, water, and gas
- Travel costs and professional dues
- Property taxes and other taxes' (except income taxes) incurred on account of the R&D organization or the facilities they use
- Insurance expenses
- Maintenance and repair, including maintenance of buildings and grounds
- Company overhead including: personnel, accounting, procurement and inventory, and salaries of research executives not on the payroll of the R&D organization

Exclude as cost:

- R&D performed abroad (outside the Continental U.S.), such as in Canada and Puerto Rico (Except in Item 3.C.)
- R&D performed by non-company R&D organizations of any kind (Except in Item 3.B.)
- · Capital expenditures
- · Patent expense
- · Income taxes and interest
- The portion of company-held R&D contracts that were subcontracted outside the reporting company
- Fellowships, grants, and gifts to promote R&D or the study of science and engineering
- Social Science R&D

Item 3.A – Report Costs Incurred for Research and Development Performed Within the Company

Federally sponsored R&D performed within the company should be reported in column 1.

Costs of company sponsored R&D performed within the company, or R&D performed within the company under contract from non-federal sources should be reported in column 2.

Costs of INDEPENDENT R&D should also be reported in column 2. For the purpose of this survey, INDEPENDENT R&D is defined as R&D performed by the company for which you anticipate reimbursement by the government through indirect charges for the purchase of products or services.

TYPES OF RESEARCH

Item 3.A.1 - Basic Resesarch

Include the cost of research projects which represent original investigation for the advancement of scientific knowledge and which do not have specific immediate commercial objectives (although they may be in the fields of present or potential interest to the reporting company).

Item 3.A.2.a - Applied Research

Include the cost of research projects which represent investigation in discovery of new scientific knowledge and which have specific commercial objectives with respect to either products or processes.

Item 3.A.2.b - Development

Include the cost of projects which represent technical activity concerned with non-routine problems encountered in translating research findings or other general scientific knowledge into products or process.

include as development:

- The design and operation of pilot plants and semiwork plants
- Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements
- Design, construction, and testing of prototypes and models
- Designs for special manufacturing equipment and tools
- Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals
- · Software developement

Exclude as development:

- Routing technical services to customers
- Toolmaking and tool tryout
- Production of detailed construction drawings and manufacturing blueprints
- Pre-production planning

ESTIMATING BASIC, APPLIED, AND DEVELOPMENT EXPENDITURES

If your company does not keep records that meet or can be allocated to these specific categories, estimate by:

- Isolating the projects that clearly fall in the development category. If your company fabricates products, such development activity will include the design, construction, and testing of prototypes and models. Some defense contracts typically call for several test models. If your company's R&D frequently involves the development of a "process" as in chemicals and petroleum, such development activity would include operations beyond the bench scale, primarily the design and operations of pilot plants or semiworks.
- Isolating the organizational units which have R&D activities that can be readily classified based on the function assigned to the unit. If R&D work is done in production units as well as in various laboratories, it is generally development type.
- Distributing the balance on the basis of individual projects or on the basis of other summaries of the work. Please use the definitions for basic, applied, and development given above.

Item 3.A.2.c – Total Costs for Applied Research and Development

Add line 3.A.2.a and line 3.A.2.b.

Item 3.A.3 – Total Costs for Basic and Applied Research and Development Performed Within the Company

Add line 3.A.1 and line 3.A.2.c.

Item 3.B - Total Costs Incurred for Research and Development Performed Outside the Company Within the United States and Financed by the Company

Report payments in the form of contracts, grants, and fellowships made to other industrial firms, commercial laboratories, consultants, educational institutions, hospitals, and research institutions or other organizations for R&D activities performed for the company.

Do not include subcontracting of R&D contracts received from the Federal Government or other companies.

Item 3.C – Total Costs Incurred for Research and Development Performed by Foreign Subsidiaries or by Other Organizations Outside of the United States and Financed by the Company

FOREIGN SUBSIDIARIES are those outside of the 50 States and the District of Columbia.

Report the amount of R&D financed by the U.S. parent or its foreign subsidiaries, including Canada and Puerto Rico, and performed by company R&D laboratories, branch plants, or other organizations, located outside the United States. Report R&D activities of foreign divisions and subsidiaries in Item 3.C only.

Exclude R&D activities performed by foreign subsidiaries which were financed by foreign governments or other outside organizations

Item 3.D – Total – Company and Other Funds, Except Federal

With the exception of "Other funds," this number represents company sponsored R&D performed within the company. It is comparable to information reported on Form 10K if you report to the Securities and Exchange Commission.

To complete this item, add line 3.A.3, line 3.B and line 3.C.

SOURCE OF FUNDS

Item 3 - FEDERAL FUNDS (Column 1)

Include:

- Amount of work done on Federal R&D contracts or subcontracts in the current year
- R&D portions of procurement contracts or subcontracts

Exclude:

Federal R&D contracts and R&D portions of procurement contracts that you subcontracted to other R&D organizations (including these would cause duplication in the statistical totals, which include data on work actually performed by each company).

If your company performs independent research and development (IR&D), please read the following carefully:

Definition of IR&D – We define IR&D funds as expenditures that are reimbursable by the government for qualified projects that usually have potential interest to the Department of Defense or other agencies of the Federal government. These IR&D funds are not included in work done under a research contract with the government. They are reimbursed to the company through indirect charges to the government for the purchase of products or services.

HOW TO REPORT – Report expenditures for which you anticipate reimbursement as company funds in column 2. Report expenditures in the period for which they are incurred. Do not include the actual reimbursement.

Item 3 – COMPANY AND OTHER FUNDS (Column 2)

Report all company-sponsored R&D performed within the company. Report R&D performed under contract from non-Federal sources.

Item 4 - COMPANY AND OTHER FUNDS, EXCEPT FEDERAL, FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE COMPANY BUDGETED FOR THE YEAR 1994

Report the estimated cost of company and other non-federally sponsored R&D that will be performed within the 50 States and the District of Columbia. This item is comparable to the 1993 figure reported in item 3.A.3, column 2.

Item 5 - NUMBER OF RESEARCH AND DEVELOPMENT SCIENTISTS AND ENGINEERS

Scientists and engineers are defined for this survey as all persons engaged in scientific or engineering work at a level which requires a knowledge of physical or life sciences or engineering or mathematics equivalent to completion of a 4-year college course with a major in these fields, regardless of whether or not they actually hold a degree in this field.

The figure on R&D scientists and engineers will be obtained primarily from two sources:

- For company laboratories performing only R&D, report the number of scientists and engineers on the rolls in January.
- 2. For employees whose activities are not solely devoted to R&D, report the proportion of their time that is devoted to R&D. For example, if a company had the full-time equivalent of 60 scientists and engineers in January 1995 and one-fourth of their time was charged to R&D projects, the figure for the number of R&D scientists and engineers for this company would be 15.

Item 6A - Coverage and Operational Status

Indicate if this form includes R&D expenditures for entire domestic company, including subsidiaries. Indicate if this company was owned or controlled by another company on December 31, 1994.

Item 6B - New Owner or Operator

Report the date the company was acquired and the new owner's name and address information.

CHECK ITEM

Mark "Yes" or "No" as appropriate for each of the checks in this item. If the answer to any of the checks is "No", provide an explanation in the remarks section.

Item 7 - CERTIFICATION

Report the name and telephone number of the person to contact regarding this report.